

**PCT**

**NOTIFICATION OF ELECTION**

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner  
US Department of Commerce  
United States Patent and Trademark  
Office, PCT  
2011 South Clark Place Room  
CP2/5C24  
Arlington, VA 22202  
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

<b>Date of mailing</b> (day/month/year) 26 June 2001 (26.06.01)	
<b>International application No.</b> PCT/GB00/03811	<b>Applicant's or agent's file reference</b> PDR/88494PWO
<b>International filing date</b> (day/month/year) 05 October 2000 (05.10.00)	<b>Priority date</b> (day/month/year) 05 October 1999 (05.10.99)
<b>Applicant</b> AMRANI, Hassan et al	

1. The designated Office is hereby notified of its election made:

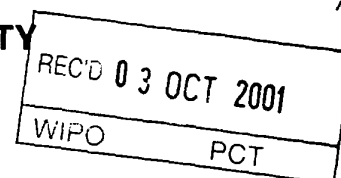
☒ in the demand filed with the International Preliminary Examining Authority on:  
28 April 2001 (28.04.01)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was  
☐ was not


made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

<b>The International Bureau of WIPO</b> 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	<b>Authorized officer</b> Zakaria EL KHODARY Telephone No.: (41-22) 338.83.38
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## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PDRix088494PWO		FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/GB00/03811	International filing date (day/month/year) 05/10/2000	Priority date (day/month/year) 05/10/1999	
International Patent Classification (IPC) or national classification and IPC G01N21/47			
Applicant THE VICTORIA UNIVERSITY OF MANCHESTER et al.			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input checked="" type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input checked="" type="checkbox"/> Certain observations on the international application</p>			
Date of submission of the demand 28/04/2001		Date of completion of this report 01.10.2001	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized officer  Mason, W  Telephone No. +49 89 2399 2623	



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB00/03811

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17):*):

**Description, pages:**

1-23 as originally filed

**Claims, No.:**

1-28 as originally filed

**Drawings, sheets:**

1/4-4/4 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB00/03811

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application.

☒ claims Nos. 27-28.

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):

☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):  
**see separate sheet**

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for the said claims Nos. .

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the standard.

☐ the computer readable form has not been furnished or does not comply with the standard.

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)

Yes: Claims 1-26

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB00/03811

	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-26
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-26
	No:	Claims	

2. Citations and explanations  
**see separate sheet**

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:  
**see separate sheet**

**RE SECTION V**

1. The present application relates to an apparatus and a method of normalising a first signal representative of a series of events with respect to a second signal, in which the first signal is spread over an energy distribution and a comparator means with a threshold adjusted by the second signal is used to discard a proportion of the distributed first signal. In particular embodiments according to the description, the first signal is a scattered or fluorescent signal which is spread (by detector broadening) to produce a photon number versus energy distribution. A proportion above or below a threshold determined by the excitation intensity level is discarded - in this way the proportion of emitted light recorded is "normalised" to the incident excitation intensity.

The following document is referred to:

D1=US5633499

**2. NOVELTY AND INVENTIVE STEP**

**2.1 CLAIMS 1-23 (APPARATUS)**

D1 (Fig. 4; cols 4-5; claims 1,6, 8) is considered to represent the closest prior art and discloses a camera for detecting (gamma ray) photons in which the camera output is divided into local areas containing at least one pixel. For each location the energy spectrum of the detected photons is formed (first signal) and the centroid of this distribution is determined - in addition a total energy centroid for the whole image (i.e. all locations summed - second signal) is determined. Only those local areas which have an energy centroid below a threshold percentage of the total energy centroid are included in a sum of all such spectra to produce a global scatter curve - the others are discarded. An energy normalisation window with upper and lower energy limits is applied to both local and global scatter counts to determine a scaling ratio for normalisation of the local energy spectra (first signal).

D1 therefore discloses all features of claim 1 except that the threshold is not used to discard a proportion of the first signal but rather to determine whether a particular first signal should or should not be included in the sum which produces the global curve.

Claim 1 therefore meets the requirement of novelty (Art. 33.2 PCT) and a since there is no motive for modifying D1 to discard only a proportion of the local energy spectra (first signal) the requirement of inventive step (Art. 33. 3 PCT) is also met - dependent claims 2-23 likewise meet the requirements of novelty and inventive step.

## **2.2 CLAIMS 24-26 (METHODS)**

On the assumption that the objection to lack of clarity (see below) resulting from omission of the word "energy" is overcome (by re-insertion thereof), independent claim 24 and dependent claims 25-26 meet the requirements of novelty and inventive step for reasons presented above in respect of claim 1.

## **RE SECTION VIII**

Claim 24. The meaning of the wording "the first signal is spread over a predetermined distribution" is not apparent in view of omission of the word "energy" between "predetermined" and "distribution" (Art. 6 PCT).

Claims 27, 28. These claims are not clear in view of their reliance on reference to the drawings (Art. 6; R. 6.2(a) PCT).

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>PDR/88494PW0</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/GB 00/ 03811</b>	International filing date (day/month/year) <b>05/10/2000</b>	(Earliest) Priority Date (day/month/year) <b>05/10/1999</b>
Applicant <b>THE VICTORIA UNIVERSITY OF MANCHESTER et al.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

**SIGNAL PROCESSING APPARATUS AND METHOD**

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☒ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

2  
☐ None of the figures.



A. CLASSIFICATION OF SUBJECT MATTER  
 IPC 7 G01N21/47 G01N21/64

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, INSPEC, COMPENDEX

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 633 499 A (LIM CHUN B ET AL) 27 May 1997 (1997-05-27) column 4-5; claims 1,6,8; figure 4 ---	1-28
A	DE 196 34 152 A (SIEMENS AG) 5 March 1998 (1998-03-05) column 2-3; claim 1; figure 2 ---	1-28
A	US 5 438 202 A (MATANZON ALEX ET AL) 1 August 1995 (1995-08-01) column 5-8; claim 1; figures 3,5 ---	1-28
A	US 4 258 428 A (WORONOWICZ ERIC M) 24 March 1981 (1981-03-24) column 4-5; claim 1; figure 1 ---	1-28
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

° Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*&\* document member of the same patent family

Date of the actual completion of the international search

14 February 2001

Date of mailing of the international search report

21/02/2001

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
 NL - 2280 HV Rijswijk  
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
 Fax: (+31-70) 340-3016

Authorized officer

Mason, W

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 00/03811

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 725 963 A (TAYLOR MORRIS ET AL) 16 February 1988 (1988-02-16) column 8-11; figure 3 -----	1-18

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

T/GB 00/03811

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 5633499	A	27-05-1997	NONE		
DE 19634152	A	05-03-1998	WO	9808076 A	26-02-1998
US 5438202	A	01-08-1995	FR	2737580 A	07-02-1997
			US	5434414 A	18-07-1995
			US	5530248 A	25-06-1996
US 4258428	A	24-03-1981	NONE		
US 4725963	A	16-02-1988	AT	68260 T	15-10-1991
			AU	588593 B	21-09-1989
			AU	5732086 A	13-11-1986
			CA	1238989 A	05-07-1988
			DE	3681818 A	14-11-1991
			EP	0201849 A	20-11-1986